Aminoglycoside (AG) Resistance in *Salmonella* Serotype Typhimurium (STm) in the United States (US) and Denmark(DK): an Association Between Resistance and AG Use in Food Animals, Particularly in US Poultry

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Background: Although aminoglycosides are rarely used in food animals in DK, except for streptomycin in swine, they are commonly used in swine and poultry in the US, where, in particular, most turkey and broiler eggs are treated with gentamicin prior to hatching.

Methods: Animal isolates obtained prior to slaughter in DK, at slaughter in the US, and from ill humans in the US were tested by Sensititre microbroth dilution. Resistance breakpoints for apramycin, gentamicin and streptomycin were: 32:g/ml, 16:g/ml and 64:g/ml respectively. DK isolates from ill humans were tested by tablet diffusion and evaluated using zone diameter interpretive standards.

Results: Percent resistance in S. Typhimurium to aminoglycoside antibiotics in Swine, Poultry and Humans during 1997.

	United States			Denmark		
Drug	Swine (n=23)	Poultry1 (n=35)	Human (n=326)	Swine (n=240)	Poultry2 (n=81)	Human (n=644)
Apramycin	0	0	0	0	0	1
Gentamicin	0	28.5	4.9	0	0	<1.0
Streptomycin	43.5	54.3	55.5	20.4	0	19.0

Discussion: AG resistance is less common among STm in DK than the US. In both countries, the prevalence of AG resistance in food animals and humans reflects food animal use patterns of AG; low use of apramycin in both countries, high use of gentamicin in poultry in the US, and common use of streptomycin in both countries, except in poultry in DK.

Conclusion: Antibiotic resistance in Salmonella is a growing public health problem worldwide. As a result some countries, such as DK have adopted strict drug use practices limiting the use of antimicrobials in food animals and altered husbandry practices; these practices may have contributed to a lower prevalence of resistance in DK. Gentamicin resistance in Stm in broilers and turkeys may be acquired by humans via foodborne sources and appears to pose a risk of gentamicin resistance in STm to humans.

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